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Kaplan & Gilman LLP
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EXAMINER

MICHALSKI, JUSTIN I

ART UNIT	PAPER NUMBER
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2644

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/727,903	Applicant(s) COATS, ELON RAY	
	Examiner Justin Michalski	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45, 66-100 and 121-124 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 28, 29, 38-45, 66-70, 84-86, 95-100, 121-124 is/are rejected.
- 7) ☒ Claim(s) 5, 10-27, 30-37, 71-83 and 87-94 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/01, 9/02, 12/03</u> . | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

1. Applicant's election without traverse of Claims 1-45, 66-100, and 121-124 in the reply filed on 28 January 2005 is acknowledged.

Double Patenting

2. Claims 38-45 directed to the same invention as that of claims 14-24 of commonly assigned 10/158,628. The issue of priority under 35 U.S.C. 102(g) and possibly 35 U.S.C. 102(f) of this single invention must be resolved.

Claims 95-100 directed to the same invention as that of claims 83-89 of commonly assigned 10/158,628. The issue of priority under 35 U.S.C. 102(g) and possibly 35 U.S.C. 102(f) of this single invention must be resolved.

Since the U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302), the assignee is required to state which entity is the prior inventor of the conflicting subject matter. A terminal disclaimer has no effect in this situation since the basis for refusing more than one patent is priority of invention under 35 U.S.C. 102(f) or (g) and not an extension of monopoly.

Failure to comply with this requirement will result in a holding of abandonment of this application.

3. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to

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identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 38-45 and 95-100 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 14-24 and 83-89 of copending Application No. 10/158,628. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 6-9, 28, 29, 38-40, 42-45, 66-70, 84-86, 95-100, 121-124 are rejected under 35 U.S.C. 102(b) as being anticipated by Blackmer (US Patent 4,182,930).

Regarding Claims 1 and 66, Blackmer discloses a method and sub-harmonic generator, comprising: an input filter operable to receive an input signal containing frequencies from among a first range and to produce a first intermediate signal containing frequencies from among a second range (Filter 38); a signal divider circuit

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operable to receive the first intermediate signal and to produce a square wave signal containing square wave signal components at fundamental frequencies from among a third range (Fig. 6F), the third range of frequencies being about one octave below the second range of frequencies (Col. 2, lines 56-59); a wave-shaping circuit operable to receive the square wave signal and to produce a second intermediate signal containing sinusoidal signal components from among frequencies corresponding to the respective fundamental frequencies of the square wave signal components (Fig. 6G); an RMS detector (Detector 46, Col. 5, lines 9-13) operable to produce an RMS signal corresponding to an instantaneous amplitude of the first intermediate signal; and a voltage controlled amplifier (gain control 24) operable to amplify the second intermediate signal by an amount proportional to the RMS signal to produce a sub-harmonic signal (output of 24).

Regarding Claims 2 and 84, Blackmer further discloses a summing circuit operable to receive a stereo signal including a left channel signal and a right channel signal, and to aggregate the left and right channel signals to produce the input signal (input nodes to filter 38).

Regarding Claim 3, Blackmer discloses the input filter is a band-pass filter (Col. 4, lines 12-17) i.e. rejects all signal energy above about 100Hz).

Regarding Claims 6 and 67, Blackmer further discloses the band-pass filter (12 and 38) is operable to pass frequencies in the second range, the second range being contained within the first range (Col. 4, lines 12-49).

Regarding Claims 7, 8, 68 and 69, Blackmer further discloses, the band-pass filter (12) includes a low corner frequency of about 40 Hz and a high corner frequency of about 110 Hz such that the second range is about 40-110 Hz and a low corner frequency of about 56 Hz and a high corner frequency of about 96 Hz such that the second range is about 56-96 Hz (Col. 4, lines 12-49).

Regarding Claims 9 and 70, Blackmer further discloses a zero crossing detector (182) operable to produce a zero crossing signal that transitions each time the first intermediate signal substantially matches a reference potential.

Regarding Claims 28 and 85, Blackmer further discloses at least one band-pass filter operable to receive the input signal and to produce a third intermediate signal containing frequencies from among a fourth range (12B), the fourth range of frequencies including at least some frequencies above the third range of frequencies (12A, Col. 4, lines 18-49); an amplifier operable to increase an amplitude of the third intermediate signal to produce a fourth intermediate signal (24); a left channel summation circuit operable to sum the left channel signal and the fourth intermediate signal to produce at least a portion of a left channel output signal (20B); and a right channel summation circuit operable to sum the right channel signal and the fourth intermediate signal to produce at least a portion of a right channel output signal (20A).

Regarding Claims 29 and 86, Blackmer further discloses a stereo width expansion circuit operable to (i) cancel energy at at least some frequencies from among a fourth range of frequencies from the left channel signal (12B) to produce at least a portion of a left channel output signal (20B); and (ii) cancel energy at at least some

frequencies from among a fifth range of frequencies from the right channel signal (12C) to produce at least a portion of a right channel output signal (20A).

Regarding Claims 38 and 95, Blackmer discloses a method and sub-harmonic generator (Fig. 2), comprising: a sub-harmonic signal circuit operable to (i) receive an input signal containing frequencies from among a first range (input to 38), (ii) filter the input signal to produce a first intermediate signal containing frequencies from among a second range (12A), and (iii) produce a sub-harmonic signal from the first intermediate signal containing frequencies from among a third range (14A), the third range of frequencies being about one octave below the second range of frequencies (Col. 2, lines 56-59); at least one band-pass filter operable to receive the input signal and to produce a second intermediate signal containing frequencies from among a fourth range (12B), the fourth range of frequencies including at least some frequencies above the third range of frequencies (Col. 4, lines 18-49); an amplifier operable to increase an amplitude of the second intermediate signal to produce a third intermediate signal (Fig. 4, amp 220); and a summation circuit operable to sum the sub-harmonic signal and the third indeterminate signal to produce at least a portion of an output signal (input node to 42).

Regarding Claims 39, 96-97, Blackmer further discloses the at least one band-pass filter includes first, second and third band-pass filters (12A, 12B, and 12n) such that a sum of outputs of the first, second, and third band-pass filters exclude frequencies substantially outside the fourth range, the first band-pass filter having a

center frequency within about 35 Hz to about 45 Hz, the second band-pass filter having a center frequency within about 55 Hz to about 65 Hz, and the third band-pass filter having a center frequency within about 95 Hz to about 105 Hz (Col. 4, lines 26-49).

Regarding Claim 40, Blackmer further discloses the first band-pass filter has a center frequency of about 40 Hz, the second band-pass filter has a center frequency of about 58 Hz, and the third band-pass filter has a center frequency of about 98 Hz (Col. 4, lines 26-49).

Regarding Claims 42 and 98, Blackmer further discloses a user adjustment control operable to vary the magnitude of the second intermediate signal (Fig. 2, variable resistor 52).

Regarding Claims 43 and 99, Blackmer further discloses a low pass filter (filter 42) operable to (i) receive the sub-harmonic signal; and (ii) attenuate frequencies substantially below the third range to produce a filtered sub-harmonic signal, the summation circuit being further operable to sum the filtered sub-harmonic signal and the third intermediate signal to produce at least a portion of the output signal (input node to filter 42).

Regarding Claims 44 and 100, Blackmer further discloses the sub-harmonic circuit is further operable to produce a low pass signal containing frequencies from among those below a first corner frequency (low pass filter 42), and the summation circuit being further operable to sum (i) the sub-harmonic signal; (ii) the third intermediate signal; and (iii) the low pass signal to produce at least a portion of the output signal (output of filter 42).

Regarding Claim 45, Blackmer further discloses a summing circuit operable to receive a stereo signal including a left channel signal and a right channel signal (input node to filter 38), and to aggregate the left and right channel signals to produce the input signal (input nodes to 38); a left channel summation circuit operable to sum the left channel signal and the third intermediate signal to produce at least a portion of a left channel output signal (adder 22B); and a right channel summation circuit operable to sum the right channel signal and the third intermediate signal to produce at least a portion of a right channel output signal (adder 22A).

Regarding Claims 121 and 123 Blackmer discloses a method and apparatus comprising: a signal divider circuit (34) operable to receive a signal containing frequencies from among a first range and to produce a square wave signal (Fig. 6B) containing square wave signal components at fundamental frequencies from among a second range of frequencies about one octave below the first range of frequencies (Col. 2, lines 56-59); a wave-shaping circuit operable to receive the square wave signal and to produce an intermediate signal containing sinusoidal signal components based on the square wave signal (Fig. 6G); and a voltage controlled amplifier operable to amplify the intermediate signal by an amount proportional to an instantaneous amplitude of the signal to produce a sub-harmonic signal (24).

Regarding Claims 122 and 124 Blackmer discloses a method and apparatus comprising: a sub-harmonic generator, comprising: a sub-harmonic signal circuit (34) operable to produce a sub-harmonic signal from a first signal containing frequencies from among a first range of frequencies such that the sub-harmonic signal contains

frequencies from among a second range of frequencies being about one octave below the first range of frequencies (Col. 2, lines 56-59); at least one band-pass filter operable to produce an intermediate signal containing frequencies from among a third range of frequencies including at least some frequencies above the second range of frequencies (filters 12); and a summation circuit operable to sum the sub-harmonic signal and the intermediate signal to produce at least a portion of an output signal (input node to 42).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmer as applied to claim 3 above.

Blackmer discloses a band-pass filter but does not disclose it including bandpass filters having a low and high cutoff frequency. However, it is well known in the art that a band pass filter may be constructed using a low and high pass filter in series.

8. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackmer as applied to claim 40 above. Blackmer does not disclose a Q-factor of about 1.5 to 2, 1.75 to 2.25, and 1.75. to 2.25. Blackmer discloses a Q factor being adjustable

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by variable resistor 174 to adjust the Q of filter 12 (Col. 6, line 67 through Col. 7, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made adjust the value of Q within a certain range.

Allowable Subject Matter

9. Claims 5, 10-27, 30-37, 71-83, and 87-94 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (571)272-7524. The examiner can normally be reached on M-F 7-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SINH TRAN
SUPERVISORY PATENT EXAMINER

JIM